APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/735,483	12/12/2003	Mark N. Smyth	11399	1834

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EXAMINER
FLEISCHER, MARK A

ART UNIT	PAPER NUMBER
4143	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

	Application No.	Applicant(s)
Office Action Summary	10/735,483	SMYTH ET AL.
	Examiner	Art Unit	
	Mark A. Fleischer	4143	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *12/12/2003*.

2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-6* is/are pending in the application.

     4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-6* is/are rejected.

7)☒ Claim(s) *3* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *12 December 2003* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

     Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

     a)☐ All   b)☐ Some * c)☐ None of:

         1.☐ Certified copies of the priority documents have been received.

         2.☐ Certified copies of the priority documents have been received in Application No. _____.

         3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

     * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☒ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.

4)☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

5)☐ Notice of Informal Patent Application

6)☐ Other: _____ .

DETAILED ACTION

Status of Claims

1. This action is in reply to the application filed on 12 December 2003.

2. Claims 1-6 are currently pending and have been examined.

Drawings

3. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference character(s) not mentioned in the description: Figure 4 contains a key at the bottom referring to MODEL 1, MODEL 2 and SKU that are not mentioned or referenced in the specification. Corrected drawing sheets in compliance with 37 CFR 1.121(d), or amendment to the specification to add the reference character(s) in the description in compliance with 37 CFR 1.121(b) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement-drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

4. The disclosure is objected to because of the following informalities: Page 4, Line 27 contains the phrase: "Each products is…" and should read, "Each product is…" Page 7, Line 26 contains the vague and indefinite phrase: "… and other information derived therefrom". Page 9, line 25 contains the phrase: "…will know be described…" instead of "will now be described." Page 10, lines 8-9 contain the phrase: "how well the Model is representing the products that are currently in the mode." The Examiner assumes the last word "mode" should be "model". Appropriate correction is required.

Claim Objections

5.   Claim 3 is objected to because of the following informalities: The limitation in line 6 reads

...weekly seasonal product factor... should read *...weekly seasonal product factors....*

Appropriate correction is required.

Claim Rejections - 35 USC § 112

6.   The following is a quotation of the second paragraph of 35 U.S.C. §112:

> The specification shall conclude with one or more claims particularly pointing out and
> distinctly claiming the subject matter which the applicant regards as his invention.

7.   Claims 1, 3, 4 and 6 are rejected under 35 U.S.C. §112, second paragraph, as being indefinite for

failing to particularly point out and distinctly claim the subject matter which applicant regards as

the invention.   Specifically, the use of the terms 'best match' in the limitations of these claims is

vague and indefinite.

Claim Rejections - 35 USC § 101

8.   35 U.S.C. §101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or
> composition of matter, or any new and useful improvement thereof, may obtain a patent
> therefor, subject to the conditions and requirements of this title.

9.   Claims 1-6 are rejected under 35 U.S.C. §101 because the claimed invention is directed to non-

statutory subject matter.   These claims constitute only *functional descriptive* material.   "In this

context, 'functional descriptive material' consists of data structures and computer programs which

impart functionality when employed as a computer component....[this type] of 'descriptive

material' [is] nonstatutory when claimed as descriptive material *per se*, 33 F.3d at 1360, 31

USPQ2d at 1759. When functional descriptive material is recorded on some computer-readable

medium, it becomes structurally and functionally interrelated to the medium and will be statutory

in most cases since use of technology permits the function of the descriptive material to be

realized.   Compare *In re Lowry*, 32 F.3d 1579, 1583-84, 32 USPQ2d 1031, 1035 (Fed. Cir. 1994)

(discussing patentable weight of data structure limitations in the context of a statutory claim to a data structure stored on a computer readable medium that increases computer efficiency) and *Warmerdam*, 33 F.3d at 1360-61, 31 USPQ2d at 1759 (claim to computer having a specific data structure stored in memory held statutory product- by-process claim) with *Warmerdam*, 33 F.3d at 1361, 31 USPQ2d at 1760 (claim to a data structure *per se* held nonstatutory)." MPEP §2106.01. In the instant claims, this functional descriptive material consists of the manipulation of abstract ideas and mathematically or algorithmically based modifications of data. Although these claims may produce a tangible result, *i.e.,* a demand forecast, they are nevertheless non-statutory as neither the claims or the specification recites any embodiment relating to the use of these ideas in a computer or stored in a computer-readable medium or other technology that "permits the function of the descriptive material to be realized." MPEP §2106.01.

Claim Rejections - 35 USC § 102

10. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

11. Claims 1 - 6 are rejected under 35 U.S.C. 102(b) as being anticipated by Bunn (1999).

12. **Examiner's Note**: The Examiner has pointed out particular references contained in the prior art of record within the body of this action for the convenience of the Applicant. Although the specified citations are representative of the teachings in the art and are applied to the specific limitations within the individual claim, other passages and figures may apply. Applicant, in preparing the response, should consider fully the entire reference as potentially teaching all or part of the claimed invention, as well as the context of the passage as taught by the prior art or disclosed by the Examiner.

Claim 1:

13. Bunn (1999) as shown, discloses and/or describes the following limitations:

- *storing within a data warehouse* (see at least Bunn (1999) p. 431, first sentence: "...product re-ordering and inventory management is now well developed in terms of data base design...", and p.442: "large-scale analyses still need to be undertaken to develop robust grouping and estimation facilities within the very large *database* software which characterise commercial practice in this area.") *historical weekly sales data for said plurality of products* (see at least Bunn (1999) p.432, para 1: "Alternatively, Withycombe (1989) ('WGSI') combines the *historical data* for all *products* within a group by adding their unit demands for each time period." Bunn further describes different time periods, specifically at the top of page 432: "...are revised less frequently than level and trend estimates in normal adaptive forecasting methods (yearly rather than monthly or **weekly**)..." Emphasis added.).

- *defining a plurality of seasonal models, each one of said seasonal models modeling an annual sales pattern for a group of products associated with said one of said seasonal models* (see at least Bunn p.432: "This group seasonal index is subsequently used for all items belonging to the group.")

- *comparing the historical weekly sales data for one of said plurality of products with each one of said seasonal models to determine a best match between said one of said plurality of products and said seasonal models;* (see at least Bunn (1999) p.433 2nd full para.: "First, we use the business classes as given by the company. Second, we form groups of products within the business classes, using cluster analysis. Finally, the whole set of time series is then considered to create larger statistical classes of products, to **compare** with the business classes." Emphasis added.) *and*

- *associating said one of said plurality of products with the seasonal model* (see at least Bunn p. 432, section 2: "The key task in using grouped seasonal indices is the actual formation of the groups. The business reasons for grouping items [...] may not be optimal for the statistical purpose of improving short-term forecasts. A **statistical grouping** would be

expected to **improve forecast performance, to be intrinsic to the forecasting method,** but in practice probably would need to be maintained alongside the company's traditional hierarchical product line management." Emphasis added. The action of 'statistical grouping', in effect, entails the actions of **comparing** and **associating** time series and models and thereby establishes an equivalence to the limitations above.) *determined to provide the best match with said one of said plurality of products.* (see at least Bunn (1999) p.439: "The average linkage between-groups method was implemented to join clusters and the Euclidean distance was used to measure 'nearness'." Here, 'nearness' is used to establish a 'best match'.)

Claim 2

14. Bunn (1999) as shown, discloses and/or describes the following limitations:

- *each one of said seasonal models comprises a series of weekly product group seasonal factors, each one of said weekly product group seasonal factors representing a ratio between:*

- *a total historical sales volume for all products in the group of products* (see at least Bunn (1999) p. 432: "Alternatively, Withycombe's (1989) ('WGSI') combines the historical data for all products within a group by adding their unit demands for each time period. Then, the new aggregated series' history is used to estimate the seasonal indices.") *represented by said one of said seasonal models during a one week period; and*

- *an average weekly sales volume for all products in the group of products represented by said one of said seasonal models, said average weekly sales volume being determined over a period of fifty-two consecutive weeks* (see at least Bunn (1999) p. 439: "In order to deseasonalize the data, the classical decomposition technique of multiplicative ratio-to-moving averages was implemented." Examiner notes that determining the average weekly sales volume 'over a period of fifty-two consecutive weeks' is a **moving average**. Examiner further notes that the term 'decomposition' in the forecasting arts can refer to a seasonality

index wherein the numerator of the index is the value of an element in a time series and the denominator is a moving average of those values.).

Claim 3:

15. Bunn (1999) as shown discloses and/or describes the following limitations:

- *calculating a series of weekly product seasonal factor for said one of said plurality of products* (see at least Bunn p. 431, abstract: "This paper addresses the issue of **estimating** seasonal indices for multi-item, short-term forecasting, based upon both individual time series estimates and groups of similar time series." Emphasis added.), *each one of said seasonal models comprises a series of weekly seasonal factors, each one of said weekly product seasonal factors representing a ratio between:*

  - *a historical sales volume for said one of said plurality of products during a one week period* (see at least Bunn (1999) p. 432: "Alternatively, Withycombe's (1989) ('WGSI') combines the historical data for all products within a group by adding their unit demands for each time period. Then, the new aggregated series' history is used to estimate the seasonal indices."); *and*

  - *an average weekly sales volume for said one of said plurality of products determined over a period of at least fifty-two consecutive weeks* (see at least Bunn (1999) p. 439: "In order to deseasonalize the data, the classical decomposition technique of multiplicative ratio-to-moving averages was implemented." Examiner notes that determining the average weekly sales volume 'over a period of fifty-two consecutive weeks' is a **moving average**. Examiner further notes that the term 'decomposition' in the forecasting arts refers to a seasonality index wherein the numerator of the index is the value of an element in a time series and the denominator is a moving average of those values.).*; and*

- *comparing said weekly product seasonal factors for said one of said plurality of products with the weekly product group seasonal factors for said seasonal models for corresponding weeks to determine a best match between said one of said plurality of products and said seasonal models* (see at least Bunn p. 432, section 2: "The key task in using grouped seasonal indices

is the actual formation of the groups. The business reasons for grouping items [...] may not be optimal for the statistical purpose of improving short-term forecasts. **A statistical grouping** would be expected **to improve forecast performance, to be intrinsic to the forecasting method,** but in practice probably would need to be maintained alongside the company's traditional hierarchical product line management." Emphasis added. The action of 'statistical grouping', in effect, entails the actions of **comparing** and **associating** time series and models and thereby establishes an equivalence to the limitations above.

Claim 4:

16. Bunn as shown discloses and/or describes the following limitations:

- *a database of historical weekly demand data* (see Bunn p.431-2: "This is because seasonal indices are revised less frequently ... (yearly rather than monthly or **weekly**)..." Emphasis added.) *for a plurality of products* (see at least Bunn (1999) p. 431, first sentence: "product re-ordering and inventory management is now well developed in terms of **data base** design...", and p.442: "large-scale analyses still need to be undertaken to develop robust grouping and estimation facilities within the very large **database** software which characterise commercial practice in this area." Emphasis added.);

- *a plurality of seasonal models, each one of said seasonal models modeling an annual sales pattern for a group of products associated with said one of said seasonal models* (see at least Bunn (1999) p.433 2nd full para.: "First, we use the business classes as given by the company. Second, we form groups of products within the business classes, using cluster analysis.); and*

- *means for comparing the historical weekly sales data for one of said plurality of products with each one of said seasonal models to determine a best match between said one of said plurality of products and said seasonal models and associating said one of said plurality of products with the seasonal model determined to provide the best match with said one of said plurality of products* (Bunn (1999) p.433, para. 2: "Finally, the whole set of time series is then

considered to create larger statistical classes of products, to **compare** with the business classes." Emphasis added.).

Claim 5:

17. Bunn (1999) as shown, discloses and/or describes the following limitations:

- *each one of said seasonal models comprises a series of weekly product group seasonal factors, each one of said weekly product group seasonal factors representing a ratio between:*

- *a total historical sales volume for all products in the group of products represented by said one of said seasonal models during a one week period* (see at least Bunn (1999) p. 432: "Alternatively, Withycombe's (1989) ('WGSI') combines the historical data for all products within a group by adding their unit demands for each time period. Then, the new aggregated series' history is used to estimate the seasonal indices."); *and*

- *an average weekly sales volume for all products in the group of products represented by said one of said seasonal models, said average weekly sales volume being determined over a period of fifty-two consecutive weeks* (see at least Bunn (1999) p. 439: "In order to deseasonalize the data, the classical decomposition technique of multiplicative ratio-to-moving averages was implemented." Examiner notes that determining the average weekly sales volume 'over a period of fifty-two consecutive weeks' is a **moving average**. Examiner further notes that the term 'decomposition' in the forecasting arts refers to a seasonality index wherein the numerator of the index is the value of an element in a time series and the denominator is a moving average of those values.).

Claim 6:

18. Bunn (1999) as shown discloses and/or describes the following limitations:

- *calculating a series of weekly product seasonal factor for said one of said plurality of products* (see at least Bunn p. 431, abstract: "This paper addresses the issue of **estimating** seasonal indices for multi-item, short-term forecasting, based upon both individual time series estimates and groups of similar time series." Emphasis added.), *each one of said seasonal*

*models comprises a series of weekly seasonal factors, each one of said weekly product
seasonal factors representing a ratio between:*

–   *a historical sales volume for said one of said plurality of products during a one week
    period* (see at least Bunn (1999) p. 432: "Alternatively, Withycombe's (1989) ('WGSI')
    combines the historical data for all products within a group by adding their unit demands
    for each time period. Then, the new aggregated series' history is used to **estimate** the
    seasonal indices." Emphasis added.)*; and*

–   *an average weekly sales volume for said one of said plurality of products determined
    over a period of at least fifty-two consecutive weeks* (see at least Bunn (1999) p. 439: "In
    order to deseasonalize the data, the classical decomposition technique of multiplicative
    ratio-to-moving averages was implemented." Examiner notes that determining the
    average weekly sales volume 'over a period of fifty-two consecutive weeks' is a **moving
    average**. Examiner further notes that the term 'decomposition' in the forecasting arts
    refers to a seasonality index wherein the numerator of the index is the value of an
    element in a time series and the denominator is a moving average of those values.)*; and*

●   *comparing said weekly product seasonal factors for said one of said plurality of products with
    the weekly product group seasonal factors for said seasonal models for corresponding weeks
    to determine a best match between said one of said plurality of products and said seasonal
    models* (see at least Bunn p. 432, section 2: "The key task in using grouped seasonal indices
    is the actual formation of the groups. The business reasons for grouping items […] may not
    be optimal for the statistical purpose of improving short-term forecasts. **A statistical
    grouping** would be expected **to improve forecast performance, to be intrinsic to the
    forecasting method**, but in practice probably would need to be maintained alongside the
    company's traditional hierarchical product line management." Emphasis added. Examiner
    notes that the action of 'statistical grouping', in effect, entails the actions of **comparing** and
    associating time series and models and thereby establishes an equivalence to the
    limitations above.)

Conclusion

19. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

- US 6,834,266 B2, (12-2004) Kumar, *et al.*

- US 6,609,101 B1, (8-2003) Landvater, *et al.*

- US 6,976,001 B1, (12-2005) Levanoni, *et al.*

- US 5,299,115, (3-1994) Fields, *et al.*

- D. Bunn and A. Vassilopoulos, "Using group seasonal indices in multi-item short-term forecasting", 1993, Elsevier, International Journal of Forecasting, Vol. 9; pages 517-526.

- Chamin L. Jain, "Forecasting error: How to deal with it", Fall 2001, The Journal of Business Forecasting Methods & Systems, Vol. 20, No. 3, p.2.

- Amanda Loudin (2000, May). Forecasting the future. Warehousing Management, 7(4), 34-36. Retrieved November 15, 2007, from ABI/INFORM Global database. (Document ID: 54050176).

- Richard Withycombe, "Forecasting with combined seasonal indices" (1989) International Journal of Forecasting, Vol. 5, pp. 547-552.

- Mahesh Kumar, "Error-based Clustering and Its Application to Sales Forecasting in Retail Merchandising", Ph.D. dissertation, Sloan School of Management, Massachusetts Institute of Technology, Sept. 2003.

- B. Sani and B. Kingsman, "Selecting the Best Periodic Inventory Control and Demand Forecasting Methods for Low Demand Items" (1997) The Journal of the Operational Research Society, Vol. 48, No. 7 pp.700-713.

- D. Bunn, "A Bayesian Approach to the Linear Combination of Forecasts" (1975) Operational Research Quarterly, Vol. 26, No. 2, part 1, pp. 325-329.

- SAS/ETS User's Guide, Version 8 (1999) by SAS Institute Inc., Cary, NC, USA."Chapter 26: Choosing the Best Forecasting Model".

- N. Swanson and T. Zeng, "Choosing Among Competing Econometric Forecasts: Regression Based Forecast Combination Using Model Selection" Tech Report. Pennsylvania State University, August 1997.

Any inquiry of a general nature or relating to the status of this application or concerning

this communication or earlier communications from the Examiner should be directed to Dr. **Mark**

A. Fleischer whose telephone number is **571.270.3925.** The Examiner can normally be reached

on Monday-Friday, 9:30am-5:00pm. If attempts to reach the examiner by telephone are

unsuccessful, the Examiner's supervisor, **James A. Reagan** whose telephone number is

571.272.6710.

Information regarding the status of an application may be obtained from the Patent

Application Information Retrieval (PAIR) system. Status information for published applications

may be obtained from either Private PAIR or Public PAIR. Status information for unpublished

applications is available through Private PAIR only. For more information about the PAIR system,

see http://portal.uspto.gov/external/portal/pair <http://pair-direct.uspto.gov >. Should you have

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Hand delivered responses should be brought to the **United States Patent and**

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Mark A. Fleischer, Ph.D.
Patent Examiner
Art Unit 4143
Friday, November 16, 2007
/Mark A Fleischer/ Examiner, Art Unit 4143
/JAMES A REAGAN/ Supervisory Patent Examiner, Art Unit 4143